

CAMPBELL TIMBERLAND  
MANAGEMENT, LLC  
P.O. BOX 1228  
FORT BRAGG, CA 95437  
PHONE (707) 961-3302  
FAX (707) 964-3966



TELECOPY COVER SHEET  
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DATE: 1/17/06 FAX NO.: 916-341-5550

TO: Craig Wilson

FROM: Stephen L'evre Sque

NUMBER OF PAGES (including this page) 7

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MESSAGE:

Written Comments

NEEDS TO  
BE ANSWERED  
BY 1/20/06  
DONS 02/04

↳ 303(d) Listings

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# Campbell

TIMBERLAND MANAGEMENT LLC



January 17, 2006

Craig J. Wilson  
Chief, Water Quality Assessment Unit  
Division of Water Quality  
State Water Resources Control Board  
P.O. Box 100  
Sacramento, CA 95812

## SUBJECT: CLEAN WATER ACT SECTION 303(d) LIST - REVISION

Dear Mr. Wilson,

On June 10, 2005 Campbell Timberland Management responded to your request for numeric data and information regarding the 303(d) listing process on behalf of the Hawthorne Timber Company (HTC). Please consider the following as you begin revising the list of 303(d) watersheds.

First and foremost, it is not appropriate for staff to use thresholds established by Sullivan (2000) to set regulatory standards for streams in California. The Sullivan paper is a Report issued by the Sustainable Ecosystem Institute in Portland Oregon. It has not been subject to the level of peer-review required for publishing in a typical science journal.

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deemed "cool" and placed them in "warm" areas to better isolate and characterize areas of concern. This in turn has a substantial effect on the results of the analysis. Without consistent temporal and spatial sampling across a watershed it does not seem appropriate to pool the data for analysis. - (5)

Additionally, Campbell requests that Staff consider whether it is appropriate to pool historic data from the mid and late nineties in order to characterize today's instream conditions. Since 1999 there has been a change in ownership/management on the Hawthorne property, there are more regulations that require a greater level of canopy retention along watercourses and most importantly, trees are growing every day and the watersheds in question are continuing to recover from historic practices. - (6) (7)

#### Pudding Creek Case Study

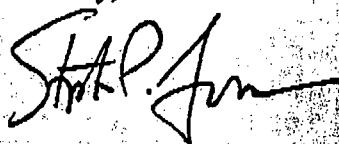
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Based on this information we respectfully request that Pudding Creek is removed from the list of water bodies proposed for 303(d) listing (temperature impairment).

Thank you for evaluating the Ten Mile tributaries separate from the mainstem channel relative to proposed listings. We encourage and are willing to further cooperate with staff in pursuit of a similar investigation in the Big and Noyo Rivers. - (9)

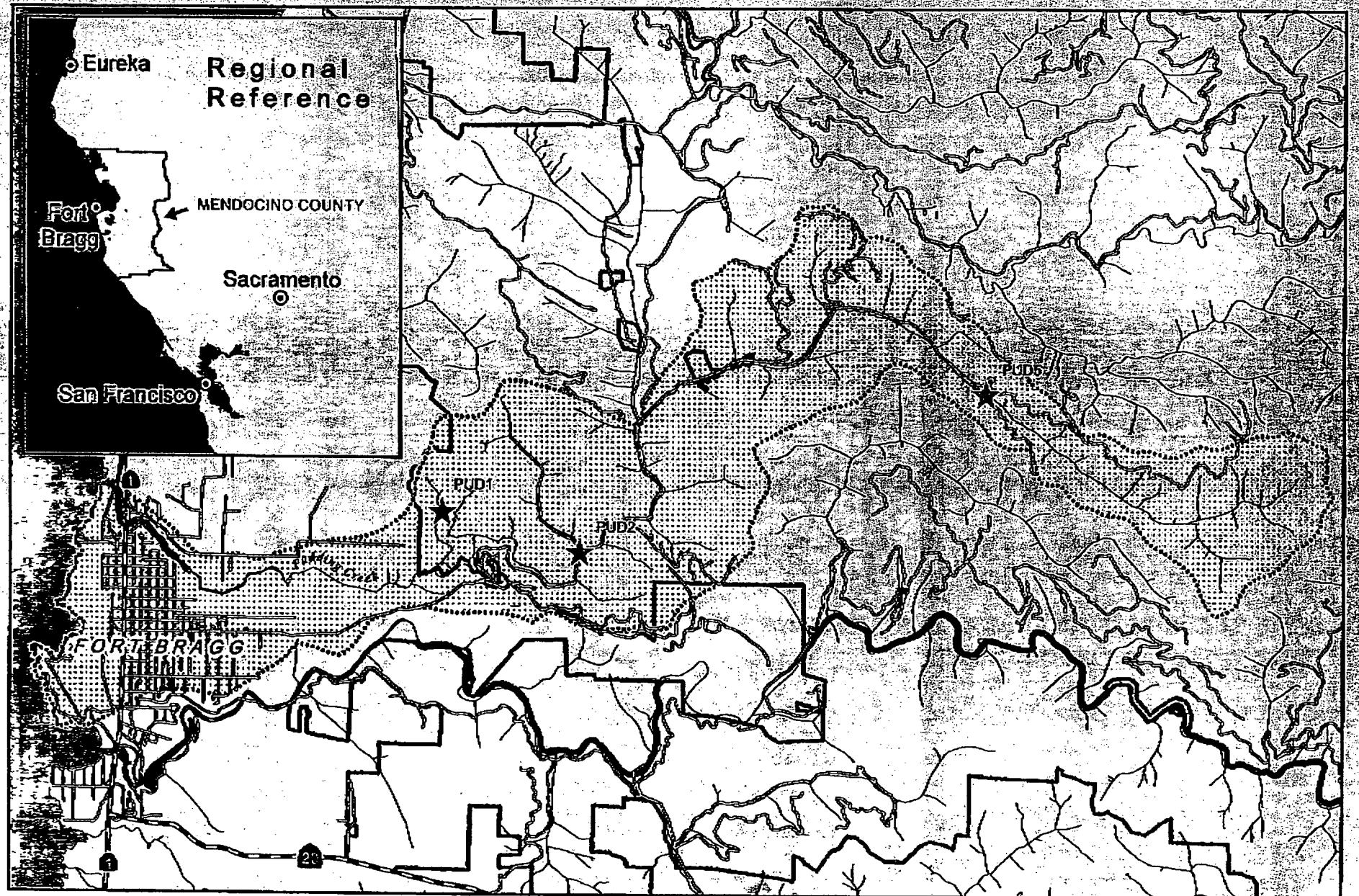
Please call if you have any questions. Our staff is also prepared to meet in person and discuss these topics at your convenience.

Sincerely,



Stephen P. Levesque  
Area Manager

Attachment: Appendix A



### Temperature Monitoring Locations: Pudding Creek Watershed

★ Monitoring Sites

■ Pudding Creek Watershed Boundary

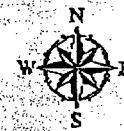
■ Hawthorne Timberlands

— State Highways

— Paved / Rocked Roads

— Major Streams

0 0.5 1 Miles



Campbell  
LAND SURVEYORS

Jan 16, 2008 SH

**Water Temperature Data Summary: Pudding Creek Watershed, 1994 - 2003**

Year	Parameter	Monitoring Site			Annual Totals
		PUD1	PUD2	Pud5	
1994	MWAT (n)	135.0	132.0		267.0
	Ave. MWAT	13.1	13.6		
	Max MWAT	14.2	14.4		
	Count Exceed				0.0
1995	MWAT (n)		132.0	113.0	245.0
	Ave. MWAT		14.3	13.6	
	Max MWAT		16.4	15.0	
	Count Exceed		47.0	7.0	54.0
1996	MWAT (n)	112.0	105.0	105.0	322.0
	Ave. MWAT	13.4	13.9	13.1	
	Max MWAT	14.4	15.3	14.3	
	Count Exceed		27.0		27.0
1997	MWAT (n)	124.0	106.0		230.0
	Ave. MWAT	14.8	15.4		
	Max MWAT	15.9	16.9		
	Count Exceed	75.0	78.0		153.0
1998	MWAT (n)		114.0		114.0
	Ave. MWAT		14.3		
	Max MWAT		15.5		
	Count Exceed		35.0		35.0
1999	MWAT (n)		135.0		135.0
	Ave. MWAT		13.3		
	Max MWAT		15.4		
	Count Exceed		29.0		29.0
2000	MWAT (n)		151.0		151.0
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	Count Exceed		19.0		19.0
2001	MWAT (n)		127.0		127.0
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	Max MWAT		15.1		
	Count Exceed		4.0		4.0
2003	MWAT (n)		105.0		105.0
	Ave. MWAT		14.4		
	Max MWAT		15.9		
	Count Exceed		43.0		43.0
Totals	MWAT (n)	371.0	1107.0	218.0	1696.0
	Ave. MWAT	13.8	13.9	13.3	
	Max MWAT	15.9	16.9	15.0	
	Count Exceed	75.0	282.0	7.0	364.0

MWAT = MAXIMUM WEEKLY AVERAGE TEMPERATURE

### Annual Exceedance Values: Pudding Creek Watershed, 1994 - 2003

Year	Parameter	Monitoring Site			Percent Exceeded All Sites
		PUD1	PUD2	Pud5	
1994	MWAT (n)	135.0	132.0		0.0
	Count Exceed				0.0
1995	MWAT (n)		132.0	113.0	22.0
	Count Exceed		47.0	7.0	54.0
1996	MWAT (n)	112.0	105.0	105.0	8.4
	Count Exceed		27.0		27.0
1997	MWAT (n)	124.0	106.0		66.5
	Count Exceed	75.0	78.0		153.0
1998	MWAT (n)		114.0		114.0
	Count Exceed		35.0		35.0
1999	MWAT (n)		135.0		21.5
	Count Exceed		29.0		29.0
2000	MWAT (n)		151.0		12.6
	Count Exceed		19.0		19.0
2001	MWAT (n)		127.0		3.1
	Count Exceed		4.0		4.0
2003	MWAT (n)		105.0		41.0
	Count Exceed		43.0		43.0
<b>Totals</b>	<b>MWAT (n)</b>	<b>371.0</b>	<b>1107.0</b>	<b>218.0</b>	<b>1696.0</b>
	Count Exceed	75.0	282.0	7.0	364.0



January 17, 2006

688

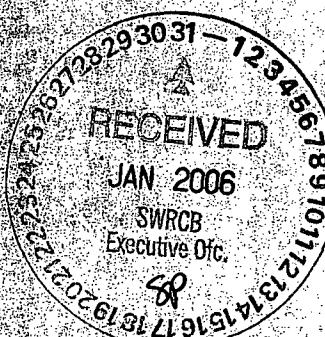
48

303 (d) Deadline:  
1/31/06

Craig J. Wilson  
 Chief, Water Quality Assessment Unit  
 Division of Water Quality  
 State Water Resources Control Board  
 P.O. Box 100  
 Sacramento, CA 95812

RECEIVED

JAN 2006

SWRCB  
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#### Pudding Creek Case Study

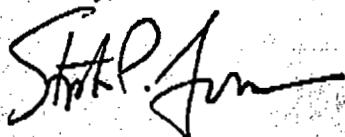
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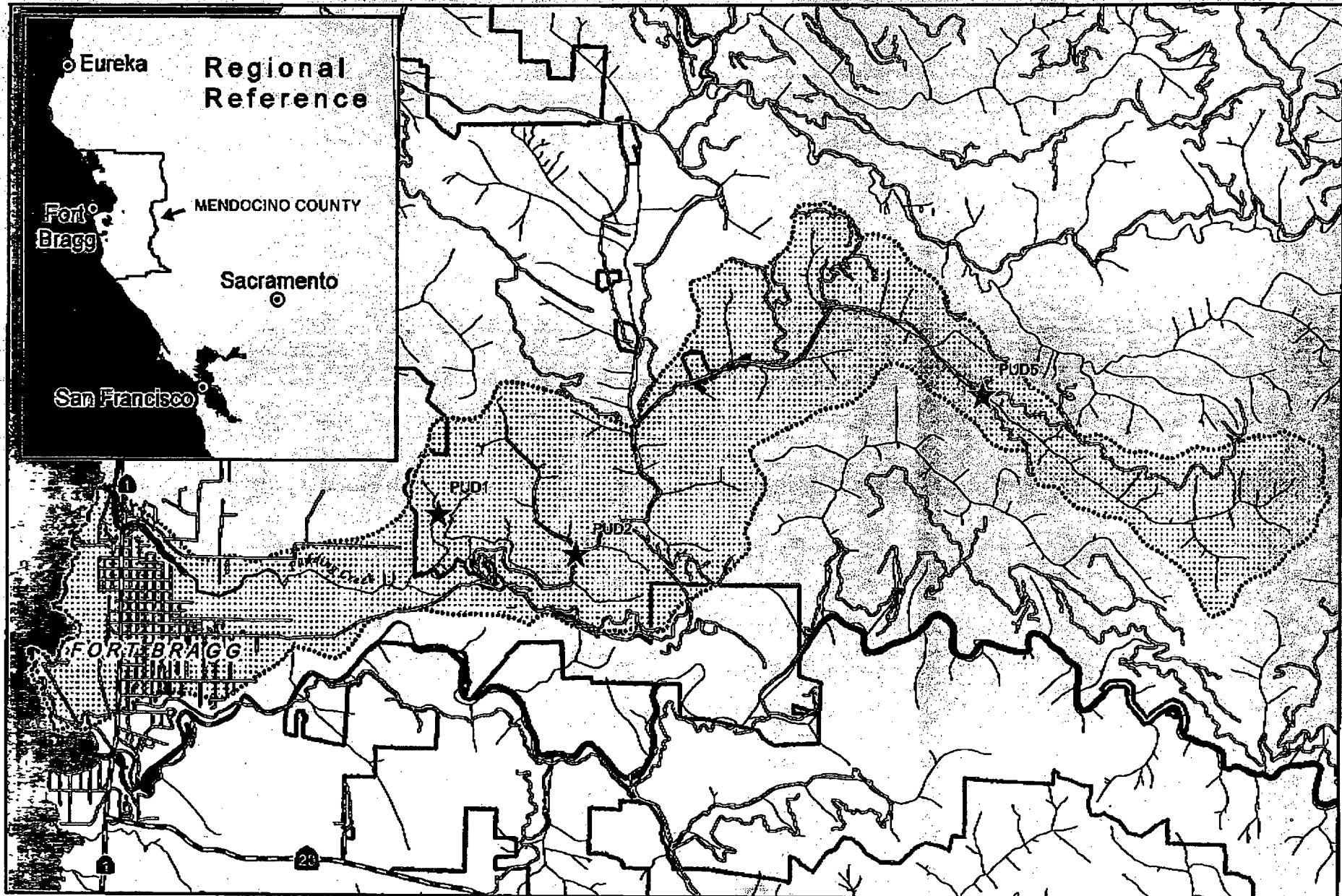
Sincerely,



Stephen P. Levesque  
Area Manager

Attachment: Appendix A

**Appendix A**



### Temperature Monitoring Locations: Pudding Creek Watershed

★ Monitoring Sites

■ Pudding Creek Watershed Boundary

■ Hawthorne Timberlands

— State Highways

— Paved / Rocked Roads

— Major Streams

0 0.5 1 2 Miles



Jan 16, 2006 SH

*Can we use  
the max.  
MUST? is this  
the same as the  
annual max?*

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TO: Craig Wilson

FROM: Stephen Levesque

NUMBER OF PAGES (including this page): 7

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**MESSAGE:**

Written Comments

↳ 303(d) Listings

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## Factsheet Details

<b>Factsheet ID:</b>	2716	<b>Listing Year:</b>	2004
<b>Board:</b>	Region 1	<b>Status:</b>	Data Review Complete
<b>Waterbody:</b>	Mendocino Coast HU, Noyo River HA, Pudding Creek		
<b>WBID:</b>	CAR1132005020020227182345		
<b>Pollutant Exceeding:</b>	<b>Designated Beneficial Use:</b> CO - Cold Freshwater Habitat		
<b>Secondary Uses:</b>			
<b>Pollutant Category:</b>	Miscellaneous	<b>Pollutant:</b>	Temperature, water
<b>Source Category:</b>	-N/A	<b>Source:</b>	-N/A
<b>Remedial Programs:</b>			

## Numeric Description

<b>Subgroup</b>	Pollutant-Water
<b>Fraction</b>	Total
<b>Matrix</b>	Water
<b>Number of Samples</b>	0
<b>Number of Exceedences</b>	0
<b>Standard/Criteria/Objective</b>	Basin Plan: Temperature objectives for COLD interstate waters, WARM interstate waters, and Enclosed Bays and Estuaries are as specified in the "Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays of California" including any revisions thereto. A copy of this plan is included verbatim in the Appendix Section of this Plan. In addition, the following temperature objectives apply to surface waters: The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses. At no time or place shall the temperature of any COLD water be increased by more than 5°F above natural receiving water temperature. At no time or place shall the temperature of WARM intrastate waters be increased more than 5°F above natural receiving water temperature.
<b>Evaluation Guideline</b>	The guideline used was from Sullivan et al. (2000) Published Temperature Thresholds-Peer Reviewed Literature which includes reviewed sub-lethal and acute temperature thresholds from a wide range of studies, incorporating information from laboratory-based research, field observations, and risk assessment approaches. This report calculated the 7-day Mean (maximum value of the 7-day moving average of the daily mean temperature) upper threshold criterion for coho salmon as 14.8°C and for steelhead trout as 17.0°C. The risk assessment approach used by Sullivan et al. (2000) suggests that an upper threshold for the 7-day average of 14.8°C for coho and 17.0°C for steelhead will reduce average growth 10% from optimum.
<b>Data Used to Assess Water Quality</b>	When compared to the 14.8 °C coho threshold, there were 289 exceedances out of 1391 total samples taken over all of the years at this location. When compared to the 17°C threshold there were no exceedances found for any of the data (Hawthorne Timber Co., 2003).
<b>Spatial Representation</b>	There were 1,391 total samples taken at the middle to upper watershed of Pudding Creek. Hobo-Temps were placed in the pools near the bottom and towards the deepest portion to record the in-stream temperatures. In stream and riparian measurements were taken at all monitoring locations on Pudding Creek.
<b>Temporal Representation</b>	Samples were recorded for 9 years between 1994 and 2001 and again in 2003. Water temperature data were recorded at 90-minute intervals, generally from June until Mid-October upstream temperatures were measured continuously with temperature data loggers (Onset Computer Corp. model HOBO-Temp and OST temperature loggers) in Class 1 streams throughout the property from 1994 to 2004. Hobo-temps allowed uninterrupted data collection to occur throughout the critical summer period.
<b>Environmental Conditions</b>	
<b>Quality Assurance</b>	Fair
<b>QAPP Information</b>	QA/QC Information Summary was submitted. Installation of the temperature data

logger (Onset Computer Corp. model HOBO-Temp and OST temperature loggers in Class 1 streams throughout the property devices occurred one day before the first day logged on the continuous temperature monitoring figures. This was done to allow the data loggers to reach equilibrium with the instream temperature regimes and to capture complete daily cycles. No information on equipment calibration, standard operating procedures or data protocols were included with the submittal.

**QA/QC Equivalent**



January 17, 2006

Craig J. Wilson  
Chief, Water Quality Assessment Unit  
Division of Water Quality  
State Water Resources Control Board  
P.O. Box 100  
Sacramento, CA 95812

RECEIVED

JAN 2006

SWRCB  
Executive Ofc303 (d) Deadline:  
1/31/06JAN  
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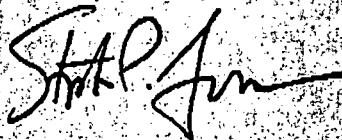
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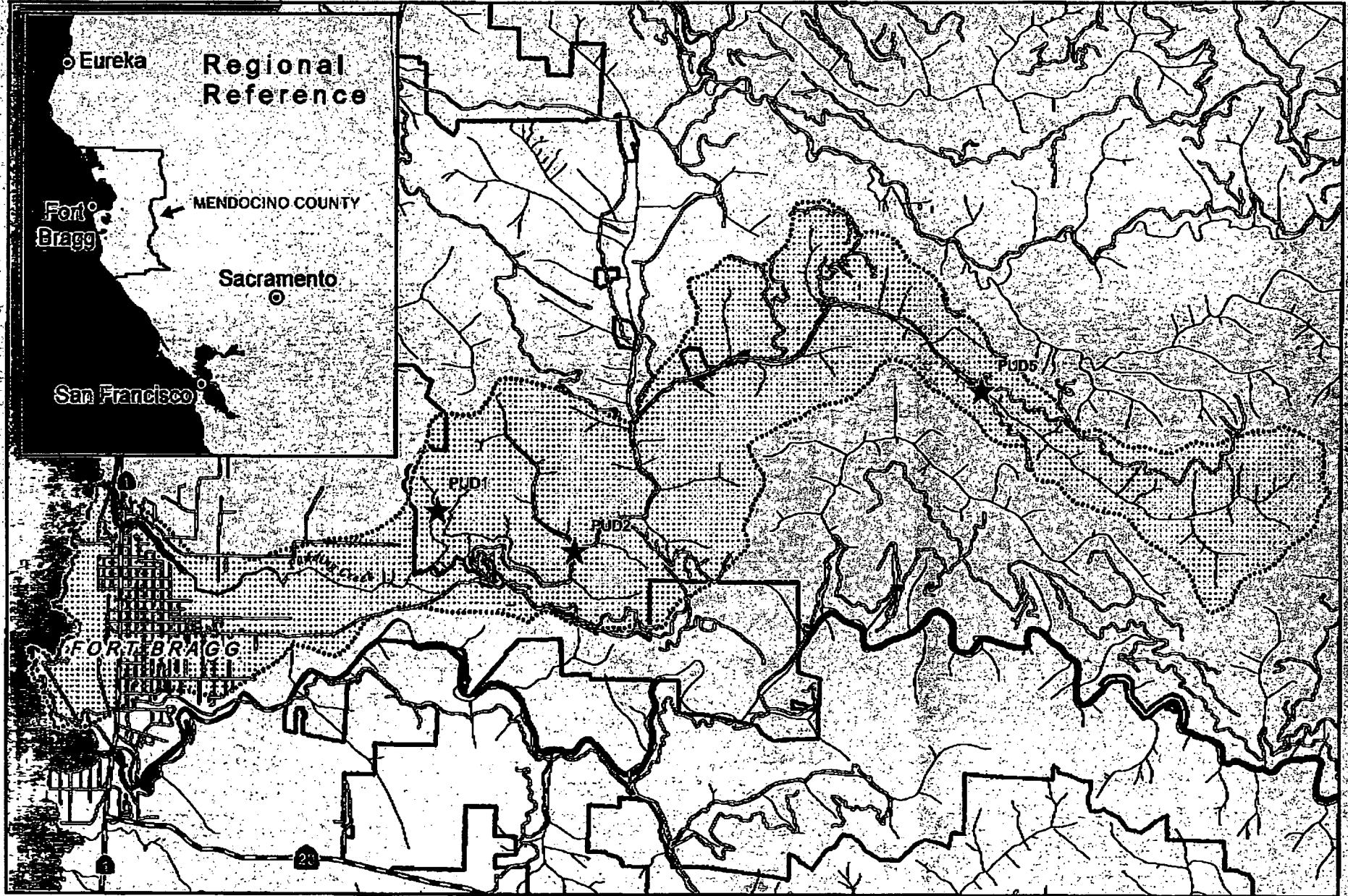
Sincerely,



Stephen P. Levesque  
Area Manager

Attachment: Appendix A

## **Appendix A**



Campbell  
TIMBERLAND MANAGEMENT

Jan 16, 2006, SH

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	Max MWAT		15.9		
	Count Exceed		43.0		43.0
Totals	MWAT (n)	371.0	1107.0	218.0	1696.0
	Ave. MWAT	13.8	13.9	13.3	
	Max MWAT	15.9	16.9	15.0	
	Count Exceed	75.0	282.0	7.0	364.0

10/4 EXCEED  
14.8°

CAMPBELL TIMBERLAND  
MANAGEMENT, LLC  
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FORT BRAGG, CA 95437  
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48  
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## Factsheet Details

**Waterbody ID:** CAR1132005020020227182345  
**Waterbody Name:** Mendocino Coast HU, Noyo River HA, Pudding Creek  
**Pollutant Name:** Temperature, water  
**Source Name:** -N/A  
**Designated Beneficial Uses :** CO - Cold Freshwater Habitat  
**Factsheet ID:** 2716  
**LOE ID:** 3143

## Numeric Line of Evidence

[Save Numeric LOE](#) [Assign References](#) [Assign Datasets](#)

**LOE Subgroup:**

Pollutant-Water

**Fraction:**

Total

**Matrix:**

Water

**Number of Samples:**

(numeric)

**Number of Exceedances:**

(numeric)

**Standard/Criteria/Objective:**

(2000 characters max)

Basin Plan: Temperature objectives for COLD interstate waters, WARM interstate waters, and Enclosed Bays and Estuaries are as specified in the "Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays of California" including any revisions

**Evaluation Guideline:**

(2000 characters max)

The guideline used was from Sullivan et al. (2000) Published Temperature Thresholds-Peer Reviewed Literature which includes reviewed sub-lethal and acute temperature thresholds from a wide range of studies, incorporating information from laboratory-based research, field observations, and risk

**Data Used to Assess Water Quality:**

(4000 characters max)

When compared to the 14.8 °C coho threshold, there were 289 exceedances out of 1391 total samples taken over the all of the years at this location. When compared to the 17°C threshold there were no exceedances found for any of the data (Hawthorne Timber Co., 2003).

**Spatial Representation:**

(2000 characters max)

There were 1,391 total samples taken at the middle to upper watershed of Pudding Creek. Hobo-Temps were placed in the pools near the bottom and towards the deepest portion to record the in-stream temperatures. In stream and riparian measurements were taken at all monitoring locations on Pudding

**Temporal Representation:**

(2000 characters max)

Samples were recorded for 9 years between 1994 and 2001 and again in 2003. Water temperature data were recorded at 90-minute intervals, generally from June until Mid-October upstream temperatures were measured continuously with temperature data loggers (Onset Computer Corp. model

**Environmental Conditions:**

(2000 characters max)

## Quality Assurance Assessment

Quality Assurance: 

Fair

QAPP Information:

(2000 characters max) 

QA/QC Information Summary was submitted. Installation of the temperature data logger (Onset Computer Corp. model HOBO-Temp and OST temperature loggers in Class 1 streams throughout the property devices occurred one day before the first day logged on the continuous temperature monitoring figures.

QA/QC Equivalent:

(2000 characters max) 

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NO REVISION  
OF F.S.  
pg | 3/13/06

10/14

EXCEED  
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0/2

siteName	yearObserved	MWMT	MWAT
ABA1	1994	12.98571	12.60143
BIG1	1994	22.34286	20.81143
BIG10	1994	16.37143	14.56857
BIG3	1994	16.97143	15.48029
BIG4	1994	16.97143	15.47571
BIG8	1994	16.85714	15.19857
CFT1	1994	18.48571	16.28429
CFT14	1994	14.28571	13.73143
CFT15	1994	14.86857	14.24643
CFT2	1994	18.85714	16.73429
CFT3	1994	15.18571	13.98143
CFT4	1994	17.74286	15.62429
CFT6	1994	14.01429	13.47429
CFT7	1994	13.65714	12.94
CFT8	1994	16.07143	14.33857
DEH1	1994	15.3	13.83143
NFT1	1994	18.54286	16.47429
NFT2	1994	16.71429	14.54714
NFT3	1994	17.48571	15.91286
NFT4	1994	17.72857	16.07857
NFT5	1994	18.34286	16.41286
NFT6	1994	15.27143	13.98714
NFT7	1994	12.77143	12.71571
NFT8	1994	16.89571	15.28957
NOY5	1994	14.23286	13.72871
NOY7	1994	14.61429	13.23714
PUD1	1994	14.85714	14.18
PUD2	1994	15.22857	14.44857
SAL2	1994	16.57143	14.51571
SAL3	1994	13.57143	13.17714
SAL4	1994	14.27143	13.63429
SAL5	1994	13.3	13.16143
SFE1	1994	17.32857	15.50857
SFE2	1994	24.28857	20.93186
SFT1	1994	14.67143	13.99
SFT11	1994	14.1	13.63143
SFT12	1994	16.67143	15.52143
SFT2	1994	15.6	14.31429
SFT3	1994	16.25714	15.11286
SFT4	1994	14.61429	14.03286
SFT5	1994	18.57143	16.77429
SFT6	1994	19.75714	16.85
SFT7	1994	18.08571	15.17571
SFT8	1994	16.24286	14.61857
SFT9	1994	14.92857	14.38857
TEN1	1994	13.07143	12.61286

siteName	yearObserved	MWMT	MWAT
USA1	1994	15.38571	14.33
USA2	1994	16.7	15.44429
USA4	1994	15.47143	14.47143
USA5	1994	16.81429	15.71571
WAG2	1994	15.69286	13.94243
ABA1	1995	14.82286	14.18786
BIG1	1995	22.93429	20.87186
BIG10	1995	17.68429	15.571
BIG3	1995	17.92286	17.07843
BIG4	1995	17.92286	17.07843
BIG8	1995	18.06714	16.23329
BIG9	1995	17.11429	15.58514
CFT1	1995	18.22429	16.58643
CFT10	1995	16.25143	14.92571
CFT16	1995	12.62714	12.35371
CFT2	1995	19.61429	17.63143
CFT3	1995	15.78571	14.89714
CFT4	1995	19.11429	17.07857
CFT5	1995	16.15714	14.90571
CFT6	1995	15.05714	14.31286
CFT7	1995	14.57143	13.94571
CFT8	1995	15.58571	14.43571
CFT9	1995	19.5	17.21286
DEH1	1995	16.17143	14.668
GAR1	1995	15.5	14.34286
NFT1	1995	20.19286	17.87057
NFT12	1995	17.03857	15.27829
NFT2	1995	17.02	15.36614
NFT3	1995	18.83	16.96086
NFT4	1995	20.99429	19.30329
NFT5	1995	19.94143	17.60829
NFT6	1995	15.91714	14.78471
NFT7	1995	20.90429	19.25229
NFT8	1995	15.59	14.308
NFT9	1995	19.10714	17.30243
NOY5	1995	16.17143	15.14286
Noy7	1995	15.38571	14.49143
Pud2	1995	17.5	16.38
Pud5	1995	16.17143	14.98857
SAL1	1995	16.42857	15.68
SAL2	1995	17.71428	15.98714
SAL3	1995	16.12857	15.48143
SAL4	1995	15.9	15.11571
SAL5	1995	15.77143	14.89429
SAL6	1995	15.67143	15.13286
SFE1	1995	15.97143	14.68571

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siteName	yearObserved	MWMT	MWAT
SFE2	1995	22.14286	19.94857
SFE3	1995	18.65714	17.01286
SFE4	1995	18.92857	17.02143
SFE5	1995	19.54286	17.66571
SFE6	1995	16.75714	15.36857
SFE7	1995	18.5	17.19286
SFE8	1995	24.34286	20.97429
SFT1	1995	16.87143	15.32
SFT12	1995	17.74286	16.50286
SFT15	1995	19.28571	17.12714
SFT2	1995	17.37143	15.61571
SFT3	1995	18.5	17.05857
SFT5	1995	19.81429	18
SFT6	1995	19.84286	17.4
SFT7	1995	17.74286	16.01571
SFT8	1995	16.97143	15.71429
SFT9	1995	16.3	15.26143
TEN1	1995	21.38571	19.63857
USA1	1995	15.4	14.38714
USA2	1995	17.31429	15.68286
USA3	1995	14.85714	14.09571
USA4	1995	16.28572	14.47429
USA5	1995	16.28571	15.14429
USA6	1995	15.11429	14.53857
WAG2	1995	16.31429	14.80571
BIG1	1996	23.02143	20.69371
BIG10	1996	16.14286	14.95286
BIG11	1996	16.27143	15.62714
BIG8	1996	17.52286	15.79043
CFT10	1996	16.22857	14.73714
CFT11	1996	17.3	16.00857
CFT12	1996	19.18571	17.44286
CFT3	1996	15.21429	14.38143
CFT4	1996	18.3	16.36143
CFT5	1996	15.91429	14.68143
CFT7	1996	14.38571	13.63429
CFT8	1996	15.94286	14.81286
CFT9	1996	18.5	16.48286
DEH1	1996	15.32857	13.91143
NFT11	1996	17.64286	17.29572
NFT13	1996	19.94286	17.84
NFT14	1996	19.05714	16.77143
NFT15	1996	19.21428	16.79429
NFT2	1996	16.47143	14.99143
NFT3	1996	18.02857	16.23286
NFT4	1996	18.25714	16.36

siteName	yearObserved	MWMT	MWAT
NFT5	1996	18.92857	16.76429
NFT7	1996	13.17143	13.13571
NFT8	1996	14.5	13.84143
NOY5	1996	15.28571	14.09714
PUD1	1996	14.64143	14.36571
PUD2	1996	16.62857	15.29143
PUD5	1996	15.51714	14.29686
SAL1	1996	15.02714	14.186
SAL2	1996	17.12857	14.88143
SAL3	1996	14.63857	13.80143
SAL4	1996	15.07	14.21586
SAL6	1996	14.62857	14.1
SFE3	1996	18.81429	17.30571
SFE4	1996	18.57143	16.72857
SFE5	1996	19.68571	17.96857
SFE6	1996	17.7	16.17857
SFE7	1996	19.88571	17.71429
SFE9	1996	24.55714	21.59143
SFT1	1996	15.45714	14.46857
SFT11	1996	16	14.61571
SFT12	1996	17.55714	16.24857
SFT15	1996	18.98571	16.88143
SFT17	1996	17.72857	16.29429
SFT18	1996	19.6	17.33571
SFT19	1996	16.25714	15.06143
SFT2	1996	16.98571	14.92
SFT3	1996	17.85714	16.34429
SFT4	1996	15.68571	14.38571
SFT5	1996	19.6	17.53572
SFT6	1996	19.44286	17.15143
SFT7	1996	18.38571	15.90857
SFT8	1996	16.7	15.51
TEN1	1996	13.85714	13.13571
USA1	1996	14.61429	13.57857
USA2	1996	16.42857	15.04286
USA3	1996	14.7	13.54857
USA4	1996	14.6	13.83857
WAG2	1996	15.9	14.17429
ABA1	1997	15.81857	15.16386
CFT1	1997	18.32857	16.67629
CFT11	1997	18.09571	16.51386
CFT2	1997	20.01143	17.84
CFT3	1997	15.87	15.31286
CFT4	1997	19.11	16.98243
CFT5	1997	14.86714	14.421
CFT6	1997	18.32857	15.38707

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siteName	yearObserved	MWMT	MWAT
CFT7	1997	14.86714	14.421
CFT8	1997	15.68143	14.46157
DEH1	1997	16.77	15.15057
NFT1	1997	19.82714	17.64371
NFT11	1997	20.91714	18.39457
NFT15	1997	19.82714	17.64371
NFT15a	1997		
NFT2	1997	17.08857	15.288
NFT3	1997	18.95	16.72257
NFT4	1997	14.86714	14.421
NFT5	1997	19.35428	17.32757
NFT6	1997	16.04714	14.99586
NFT7	1997	14.15714	14.11371
NFT8	1997	15.18286	14.56743
NFT9	1997	18.33	16.623
NOY11	1997	18.97286	17.86786
NOY2	1997	16.51714	15.35243
NOY5	1997	16.33714	15.60457
NOY7	1997	17.87429	16.26857
PUD1	1997	16.51857	15.92843
PUD2	1997	17.64143	16.94671
SAL1	1997	15.93143	15.61786
SAL2	1997	17.47857	15.97871
SAL3	1997	15.80143	15.32014
SAL4	1997	16.00714	15.31686
SFE10	1997	15.65857	14.87114
SFE11	1997	14.09143	13.49586
SFE12	1997	16.70857	15.92771
SFE13	1997	16.88714	15.54614
SFE14	1997	15.45571	14.42686
SFE15	1997	17.77571	16.55629
SFE16	1997	15.84857	15.32
SFE17	1997	20.40143	18.24786
SFE2	1997	24.45857	21.92871
SFE4	1997	19.80286	17.81157
SFE5	1997	19.34	17.79686
SFE7	1997	20.92286	17.99471
SFE9	1997	25.20428	21.89214
SFT1	1997	16.02571	15.53129
SFT12	1997	15.36143	14.73514
SFT19	1997	16.54	15.82343
SFT2	1997	17.66	15.90186
SFT3	1997	18.76714	17.09571
SFT4	1997	15.70429	15.14171
SFT5	1997	19.63571	17.67586
SFT6	1997	20.28714	17.32843

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siteName	yearObserved	MWMT	MWAT
SFT7	1997	18.01429	16.00271
SFT8	1997	16.98571	15.65343
SFT9	1997	15.79429	15.12157
TEN1	1997	15.53286	14.86243
USA1	1997	15.82	14.58257
USA2	1997	16.68714	15.10057
USA3	1997	15.99	14.52643
WAG2	1997	16.56	14.98429
ABA1	1998	15.79571	14.0641
BIG1	1998	23.09	20.64581
BIG10	1998	16.54143	14.94381
BIG11	1998	23.37714	20.84305
BIG12	1998	17.47714	16.08429
BIG13	1998	23.97286	20.8539
BIG14	1998	17.47714	16.08429
BIG4	1998	17.57	16.38457
BIG8	1998	17.27143	15.56371
BIG9	1998	16.06571	15.02657
CFT1	1998	17.85286	16.51067
CFT11	1998	17.68286	16.11333
CFT19	1998	14.13286	13.78029
CFT2	1998	18.85714	17.25286
CFT3	1998	15.47	14.70238
CFT4	1998	18.81286	16.85209
CFT5	1998	15.86429	14.78476
CFT6	1998	15.11	14.42495
CFT7	1998	14.52143	13.93886
CFT8	1998	15.77143	14.70552
DEH1	1998	16.55714	14.768
NFT1	1998	19.71143	17.64124
NFT10	1998	17.38714	15.77038
NFT15	1998	19.5	17.19076
NFT16	1998	19.09857	17.428
NFT2	1998	16.72429	15.28048
NFT3	1998	18.80714	16.952
NFT4	1998	18.94714	16.85248
NFT5	1998	19.32143	17.25152
NFT6	1998	15.88571	14.56962
NFT7	1998	13.69143	13.57581
NFT8	1998	15.36571	14.35876
NFT9	1998	18.25857	16.58543
NOY10	1998	17.62286	16.31752
NOY11	1998	20.40714	18.51581
NOY13	1998	20.15571	18.68543
NOY14	1998	20.71286	18.5659
NOY2	1998	16.49714	15.14314

siteName	yearObserved	MWMT	MWAT
NOY5	1998	14.77857	14.14162
NOY7	1998	15.36429	13.84381
NOY9	1998	20.94	18.08305
PUD2	1998	17.90857	15.47962
SAL1	1998	15.66	14.7861
SAL2	1998	16.64	14.81181
SAL3	1998	18.18	14.49391
SFE1	1998	16.81571	15.64848
SFE10	1998	14.93714	14.36552
SFE11	1998	14.42143	13.81248
SFE17	1998	17.79857	16.79724
SFE3	1998	17.15429	16.76171
SFE5	1998	17.15429	16.76171
SFE6	1998	17.22857	15.988
SFE7	1998	18.74	17.52743
SFE9	1998	24.23857	21.57295
SFT1	1998	15.93571	14.86476
SFT11	1998	16.19	14.93676
SFT12	1998	17.75429	16.49638
SFT19	1998	16.35857	15.30838
SFT2	1998	17.02	15.1581
SFT20	1998	15.05286	14.50943
SFT21	1998	15.59571	15.12762
SFT3	1998	18.18	16.60105
SFT4	1998	15.61286	14.48067
SFT5	1998	18.92857	17.32124
SFT6	1998	19.34143	17.07343
SFT8	1998	16.50429	15.53914
SFT9	1998	15.77286	15.30962
TEN1	1998	14.77286	13.77705
USA1	1998	15.28714	14.32114
USA2	1998	16.98	15.52152
USA3	1998	15.24714	14.16048
WAG2	1998	16.75143	14.75371
BIG1	1999	22.94571	20.29529
BIG10	1999	16.13428	14.96243
BIG11	1999	22.28857	20.389
BIG13	1999	23.60429	20.72914
BIG4	1999	16.54286	15.27857
BIG8	1999	16.65571	15.55614
BIG9	1999	15.56857	14.89243
CFT1	1999	17.07429	15.56
CFT11	1999	17.20286	15.83686
CFT19	1999	17.20286	15.83686
CFT2	1999	18.35	16.54386
CFT3	1999	15.06286	14.48143

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siteName	yearObserved	MWMT	MWAT
CFT4	1999	17.73143	15.883
CFT5	1999	15.43286	14.60229
CFT6	1999	14.62286	14.18686
CFT7	1999	14.07571	13.66086
CFT8	1999	14.96	13.91757
DEH1	1999	15.42571	14.27529
NFT1	1999	19.13429	16.98071
NFT10	1999	16.33857	14.88214
NFT15	1999	18.37714	16.65057
NFT16	1999	18.26286	16.57076
NFT17	1999	19.89714	17.53152
NFT2	1999	15.95286	14.82771
NFT3	1999	18.33286	16.53981
NFT4	1999	18.17429	16.244
NFT5	1999	18.44	16.499
NFT6	1999	15.41	14.31314
NFT7	1999	13.40571	13.31714
NFT8	1999	14.93571	14.21671
NFT9	1999	17.15714	15.57829
NOY10	1999	17.18286	16.13157
NOY11	1999	20.13857	18.29214
NOY13	1999	20.25143	18.50552
NOY14	1999	20.69143	18.50876
NOY2	1999	15.83857	14.87529
NOY4	1999	20.17	18.25943
NOY5	1999	14.75857	14.26143
NOY6	1999	16.83143	15.88019
NOY7	1999	14.55714	13.60214
NOY9	1999	19.12571	17.57409
PUD2	1999	16.30143	15.36
SAL1	1999	14.82286	14.56557
SAL2	1999	15.91857	14.65971
SAL3	1999	15.31286	14.60486
SAL4	1999	14.77857	14.05957
SAL6	1999	13.13143	13.04829
SFE1	1999	16.45	15.11857
SFE10	1999	13.16	12.65286
SFE11	1999	13.64571	13.17457
SFE17	1999	18.83286	16.82672
SFE19	1999	15.89714	13.78186
SFE20	1999	15.05	14.08952
SFE21	1999	15.71571	14.58809
SFE3	1999	17.30429	15.98629
SFE4	1999	17.73571	16.67305
SFE7	1999	17.78	16.76929
SFE9	1999	23.72571	20.78129

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siteName	yearObserved	MWMT	MWAT
SFT11	1999	15.87286	14.76619
SFT12	1999	15.63714	15.196
SFT19	1999	15.52286	14.643
SFT2	1999	15.77286	14.67971
SFT20	1999	14.4	13.96314
SFT21	1999	15.32286	14.80714
SFT3	1999	16.98429	15.747
SFT4	1999	14.73571	14.09414
SFT5	1999	16.48857	16.02243
SFT6	1999	18.30429	16.76243
SFT7	1999	17.44143	15.63243
SFT8	1999	15.91571	15.13814
SFT9	1999	15.13857	14.689
TEN1	1999	14.41286	13.75857
USA1	1999	14.70857	13.58514
USA2	1999	16.09857	14.89386
USA3	1999	14.77857	13.80414
USA5	1999	16.14571	15.28762
WAG2	1999	15.46857	14.11243
ABA1	2000	14.84714	13.45929
BIG1	2000	23.91714	20.68486
BIG10	2000	16.08857	14.75443
BIG11	2000	22.21572	20.19071
BIG4	2000	16.67857	15.60471
BIG8	2000	16.76857	15.52014
BIG9	2000	15.22714	14.35471
CFT1	2000	17.43286	16.13171
CFT11	2000	17.61429	16.12
CFT2	2000	18.00857	16.57643
CFT3	2000	15.15857	14.51514
CFT4	2000	17.84857	16.19329
CFT5	2000	15.61429	14.53843
CFT6	2000	14.72857	14.18943
CFT7	2000	14.93143	14.29867
CFT8	2000	16.10429	14.95819
DEH1	2000	15.89143	14.26757
NFT1	2000	19.06571	17.04486
NFT10	2000	16.97286	15.72352
NFT15	2000	18.85857	16.85686
NFT16	2000	18.47143	17.03143
NFT17	2000	19.96571	17.74057
NFT18	2000	15.84714	14.9301
NFT2	2000	15.95286	14.84914
NFT3	2000	18.74714	16.8921
NFT4	2000	18.14	16.571
NFT5	2000	18.9	17.02443

siteName	yearObserved	MWMT	MWAT
NFT6	2000	14.91714	13.97414
NFT8	2000	15.11714	14.21357
NFT9	2000	18.15857	16.64524
NOY10	2000	17.57143	16.11357
NOY11	2000	20.08	18.46014
NOY13	2000	20.13428	18.59771
NOY14	2000	21.14143	18.61657
NOY2	2000	15.88571	14.62314
NOY4	2000	19.93714	18.22571
NOY5	2000	14.73714	13.76657
NOY6	2000	16.80714	15.67914
NOY7	2000	14.44429	13.451
NOY9	2000	18.15857	16.64524
PUD2	2000	16.54428	15.13957
SAL1	2000	15.68143	14.84014
SAL2	2000	16.49	14.85543
SAL3	2000	15.04571	14.25929
SAL4	2000	15.26429	14.51443
SAL6	2000	14.95143	14.23986
SAL8	2000	14.95143	14.23986
SFE1	2000	16.93143	15.69229
SFE10	2000	14.84714	13.45929
SFE11	2000	13.91286	13.19957
SFE17	2000	20.15143	18.15129
SFE18	2000	23.40429	20.84
SFE20	2000	15.52857	14.58124
SFE21	2000	16.01143	14.82114
SFE3	2000	16.99857	15.63171
SFE4	2000	18.40571	17.20819
SFE5	2000	18.76571	17.64257
SFE6	2000	17.31571	15.94743
SFE7	2000	18.71714	17.39357
SFE9	2000	24.31571	21.287
SFT1	2000	15.62286	14.46986
SFT11	2000	15.71571	14.59048
SFT12	2000	16.86143	15.77586
SFT19	2000	15.66286	14.56471
SFT2	2000	16.22286	14.45314
SFT3	2000	17.00857	15.74843
SFT4	2000	15.13857	14.12671
SFT5	2000	18.09429	16.76171
SFT6	2000	18.23714	16.85743
SFT7	2000	18.10857	15.66371
TEN1	2000	14.07571	13.312
USA2	2000	16.03143	14.83486
USA3	2000	14.79286	13.77329

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siteName	yearObserved	MWMT	MWAT
USA5	2000	16.64571	15.72067
WAG2	2000	15.73571	14.12214
ABA1	2001	14.77143	13.15
BIG1	2001	22.94286	19.94988
BIG10	2001	15.34143	14.35917
BIG13	2001	22.94286	20.23238
BIG4	2001	14.98286	14.16714
BIG8	2001	16.11143	14.64476
BIG9	2001	14.13286	13.86821
CFT1	2001	17.29	15.81155
CFT11	2001	17.04286	15.67655
CFT2	2001	17.70857	16.22512
CFT3	2001	15.13571	14.43107
CFT4	2001	17.96	16.01238
CFT5	2001	15.36429	14.37
CFT6	2001	14.03857	13.70369
CFT7	2001	14.72714	14.32798
CFT8	2001	15.83429	14.65274
DEH1	2001	15.27143	14.1406
NFT1	2001	17.48	15.97583
NFT10	2001	16.26714	15.27762
NFT16	2001	17.59714	15.89369
NFT17	2001	16.04857	15.82774
NFT18	2001	15.35143	14.78179
NFT2	2001	15.93	14.63952
NFT3	2001	18.31143	16.61774
NFT4	2001	17.47429	16.22048
NFT6	2001	15.36571	14.195
NFT8	2001	14.73571	13.97655
NFT9	2001	16.17857	15.49929
NOY11	2001	19.36714	18.18202
NOY13	2001	20.25	18.14226
NOY14	2001	19.70428	18.43929
NOY2	2001	15.5	14.5725
NOY4	2001	19.93714	17.79357
NOY5	2001	14.37857	13.88857
NOY6	2001	16.62572	15.76071
NOY7	2001	15.45286	13.57476
NOY9	2001	18.43286	17.37012
PUD2	2001	16.18571	15.1356
SAL1	2001	15.52286	14.43405
SAL2	2001	15.55857	14.4125
SAL3	2001	14.57714	14.04405
SAL4	2001	13.79	13.46107
SAL6	2001	13.55714	12.9619
SFE10	2001	14.87	14.25583

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siteName	yearObserved	MWMT	MWAT
SFE11	2001	13.33857	12.72726
SFE18	2001	22.53429	20.44167
SFE20	2001	14.98571	13.98417
SFE21	2001	15.35429	14.16679
SFE3	2001	17.05857	15.89429
SFE4	2001	17.41571	16.33798
SFE5	2001	17.43	16.43524
SFE6	2001	17.88572	16.48214
SFE7	2001	17.45857	16.20381
SFE9	2001	23.42857	20.47833
SFT1	2001	14.96	13.98905
SFT11	2001	15.30429	14.14333
SFT12	2001	15.54714	14.93893
SFT19	2001	15.00286	14.11107
SFT2	2001	14.98143	14.08345
SFT20	2001	13.49143	13.08131
SFT21	2001	14.82571	14.11524
SFT3	2001	15.84857	14.59631
SFT4	2001	14.62	13.96429
SFT5	2001	17.79	16.26952
SFT6	2001	18.60571	16.61536
SFT7	2001	18.10429	15.51679
SFT8	2001	16.18286	14.88905
SFT9	2001	15.56714	14.58917
TEN1	2001	13.58857	12.87655
USA1	2001	14.39857	13.47441
USA2	2001	15.53714	14.49905
USA3	2001	14.32286	13.32333
USA5	2001	16.46143	15.5469
WAG2	2001	15.36	13.91286
ABA1	2002	16.72857	13.83393
BIG1	2002	22.96857	20.05411
BIG13	2002	22.47571	20.5575
BIG15	2002	22.44	20.35545
BIG4	2002	17.08571	15.32813
BIG5	2002	14.36143	13.68464
BIG8	2002	16.65714	15.3625
CFT1	2002	17.24857	15.51313
CFT11	2002	17.43143	15.91054
CFT3	2002	15.27286	14.19982
CFT6	2002	14.59571	13.94384
CFT8	2002	15.00429	13.8442
DEH1	2002	15.64714	14.14223
NFT1	2002	18.78857	16.72366
NFT10	2002	16.36143	15.04464
NFT15	2002	19.08571	16.90705

siteName	yearObserved	MWMT	MWAT
NFT16	2002	17.91571	16.62652
NFT17	2002	15.37429	14.50696
NFT18	2002	15.37429	14.50696
NFT2	2002	15.86143	14.52607
NFT3	2002	18.40286	16.645
NFT5	2002	16.76143	16.10312
NFT6	2002	15.61286	14.11688
NOY11	2002	20.24857	18.79036
NOY12	2002	19.66429	17.77625
NOY13	2002	20.18	18.63571
NOY4	2002	19.52429	18.07313
NOY5	2002	14.62	14.08089
NOY7	2002	15.00429	13.59973
NOY9	2002	18.80429	17.22384
SAL1	2002	15.18571	14.38652
SAL6	2002	15.18571	14.38652
SFE10	2002	13.71286	13.57098
SFE11	2002	13.40286	12.96152
SFE2	2002	22.96	19.98259
SFE22	2002	18.15	16.86518
SFE3	2002	17.83	16.3725
SFE4	2002	17.37	16.30848
SFE6	2002	16.67571	15.20134
SFT1	2002	15.13429	14.15384
SFT12	2002	16.93	15.75884
SFT19	2002	15.18429	14.06518
SFT20	2002	13.77714	13.31455
SFT21	2002	14.71286	14.07938
SFT23	2002	18.42143	16.48527
SFT24	2002	18.03	16.13679
SFT25	2002	15.62	14.53187
SFT26	2002	15.03429	14.46616
SFT3	2002	16.47429	15.28866
SFT4	2002	14.82429	13.99259
SFT5	2002	18.15857	16.76634
SFT6	2002	18.19	16.22518
SFT7	2002	17.62	15.15357
TEN1	2002	13.53143	12.88473
USA1	2002	14.57857	13.57902
USA5	2002	16.03	14.9808
WAG2	2002	15.22286	13.68839
ABA1	2003	17.37143	14.775
BIG1	2003	22.31286	20.545
BIG10	2003	16.23286	15.03036
Big13	2003	22.56286	20.5617
BIG15	2003	22.56	20.43

siteName	yearObserved	MWMT	MWAT
Big4	2003	16.82	15.96125
Big5	2003	15.6	14.9017
BIG8	2003	16.47429	15.47946
BIG9	2003	15.18286	14.65027
CFT1	2003	18.00857	16.5617
CFT11	2003	17.52286	16.14429
CFT12	2003	17.86857	16.96518
CFT2	2003	18.32143	16.94277
CFT3	2003	15.56	14.69071
CFT5	2003	15.50571	14.76214
CFT6	2003	15.01286	14.43464
GAR1	2003	15.11714	13.9892
NFT1	2003	18.95	17.34545
NFT10	2003	17.31714	15.84616
NFT17	2003	17.75429	17.18
NFT18	2003	15.93714	15.10821
NFT2	2003	16.04286	15.00232
NFT3	2003	18.17143	16.61679
NFT5	2003	18.33429	16.52125
NFT6	2003	15.54429	14.42045
NOY11	2003	20.50429	19.01518
NOY12	2003	19.68571	18.07616
NOY13	2003	19.62572	18.55348
NOY14	2003	20.57571	18.63357
NOY2	2003	16	14.84107
NOY4	2003	19.54143	18.13179
NOY5	2003	15.11714	14.62348
NOY7	2003	14.75571	14.06223
NOY9	2003	19.24286	17.76402
PUD2	2003	16.90429	15.88839
SAL1	2003	15.84143	15.22705
SAL6	2003	14.75714	14.27152
SFE10	2003	14.22143	14.00705
SFE11	2003	14.71143	14.27786
SFE2	2003	23.37571	20.34232
SFE3	2003	18.60857	17.43955
SFE5	2003	18.87714	17.66384
SFE6	2003	17.45	16.13589
SFE7	2003	18.28	17.24857
SFT1	2003	15.67429	14.63366
TEN1	2003	18.55714	17.26348
TEN2	2003	15.19143	14.19777
USA1	2003	15.17	14.31045
USA2	2003	16.09143	15.19098
USA5	2003	16.64429	15.80384
WAG2	2003	15.26571	14.20187

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